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ORAL PRESENTATION



Abstract 001

Development and Evaluation of a Digital Health-Supported and Community Pharmacy-Based Prediabetes Management Program (Prime Program)

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ABSTRACT

Background and Objectives: Prediabetes increases the risk of developing diabetes when left unmanaged. While lifestyle interventions have proven effective in managing prediabetes, Malaysia lacks health programs that provide these interventions. PRIME is a digital health-supported and community pharmacy-based lifestyle intervention program for individuals with prediabetes. This study aims to develop and evaluate the effectiveness of the PRIME program. **Methods:** This study was conducted in two phases: In phase 1, the development of the PRIME program and the mobile app was guided by the Behaviour Change Wheel based upon evidence from previous literature and a local survey. A user acceptance test was conducted to assess the acceptability of the PRIME mobile app. Phase 2 involved implementation of a two-arm cluster randomized controlled trial in 16 community pharmacies from Selangor and Kuala Lumpur. Participants with prediabetes who were overweight or obese were recruited into the study. While all participants could self-monitor their health metrics through the PRIME app, only the intervention group received additional support from personalized counselling from pharmacists, in-app prediabetes education modules, and peer support chatgroups. The primary outcome of differential changes in weight loss was assessed using mixed-effect modelling at 6-month. **Results and Discussion:** In phase 1, eight participants completed the user acceptance test, with majority ($\geq 75\%$) of the participants satisfied with their experience using the mobile app. In phase 2, 91 participants (intervention, $n=46$; usual care $n=45$) were recruited into the cluster randomized controlled trial, with an attrition rate of 10%. Results showed that the intervention group lost significantly more weight of 1.26kg (95%CI -2.36kg to -0.15kg) than the usual care at 6-month. **Conclusions:** This study demonstrated that

the PRIME program is potentially effective and feasible for managing prediabetes in the Malaysian setting.

Abstract 002

Machine Learning Approach to Predict Medication Non-Adherence among Patients with Chronic Diseases Considering Complementary and Alternative Medicine (CAM) Use and Proneness

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ABSTRACT

Background and Objectives: In Malaysia, previous studies found millions worth of medications were wasted among chronic disease patients due to medication non-adherence reflecting a long-term financial burden. The prevalent CAM use in Asia where cultural beliefs may have a significant influence in their preference may worsen the condition. Therefore, this study aims to identify key predictors of medication non-adherence among chronic disease patients developing and interpreting machine learning (ML) models to explore how CAM-related beliefs influence adherence behaviour. **Methods:** A cross-sectional survey of 270 patients with diabetes, hypertension, or/and dyslipidaemia at a tertiary hospital outpatient clinic was conducted. Nineteen input variables were collected, including socio-demographics, clinical data, CAM usage history, and responses to the Complementary and Alternative Medicine Beliefs Inventory (CAMBI). Feature selection was performed using sequential backward elimination (SBE) with Random Forest (RF), Support Vector Machine (SVM), and Logistic Regression (LR), selecting 8, 6, and 9 variables respectively. Eleven ML algorithms were used to build models on selected variable sets across both imbalanced and SMOTE-balanced datasets, resulting in 66 models. The best-performing model underwent SHapley Additive exPlanations (SHAP) analysis to determine each variable's impact on medication non-adherence. **Results and Discussion:** The best-performing



model was SVM with a linear kernel using an unbalanced dataset and six SVM-selected variables: race, religion, education, hypertension status, daily medication doses, and belief in natural treatment, achieving an AUC of 0.808. SHAP analysis revealed that belief in natural treatment, religion, and daily medication doses positively associated with non-adherence. These findings underscore the importance of considering cultural and belief-based factors in non-adherence prediction models. **Conclusion:** ML with SHAP analysis identified key predictors of medication non-adherence, emphasising cultural and belief-based influences. These findings support the need for personalized, CAM-aware interventions and the use of explainable AI to help clinicians improve adherence and reduce medication waste.

Abstract 003

Evaluating a One-Stop Breastfeeding Support Smartphone Application for New Mothers in Malaysia: A Delphi Study

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ABSTRACT

Background and Objectives: Breastfeeding is vital for infant health in preventing fatal illnesses, improves mother-infant bonding, reduces postpartum depression for mothers and reduces healthcare costs and burden for the government. "Thousand Days", a one-stop breastfeeding support smartphone application has been developed to provide breastfeeding support in Malaysia. This study aims to assess the relevance of content, easiness of navigation, and usefulness of the mobile application for new mothers in Malaysia from breastfeeding experts and healthcare professionals. **Methods:** A Delphi with a panel of lactation experts and healthcare professionals with breastfeeding support experience was conducted, and a purposive sampling method was used with predefined selection criteria. The cut-off value to approach consensus was predefined as a threshold of 75% or higher, and a quantitative descriptive statistical analysis was performed. **Results and Discussion:** Of the 58 items evaluated in the first Delphi round, 56 (96.6%) reached the consensus threshold of $\geq 75\%$ agreement, indicating strong overall alignment across expert opinions. They all reached a consensus that the content of the app is accurate, comprehensive and relevant to breastfeeding mothers in Malaysia. However, two items (3.45%) did not meet the consensus criteria: "The interface design of the app is visually appealing and modern" (69.70%) and "The images and graphic elements (e.g.,

typography, icons, buttons, colour scheme) are visually appealing and relevant to the content" (63.64%). Successive rounds will incorporate modifications based on comprehensive expert feedback, ensuring continuous improvement of the app's features and content. **Conclusion:** While many applications exist globally, this study offers insight into how breastfeeding experts and healthcare professionals in Malaysia perceive the effectiveness, usability, and content relevance of a national app, which is a gap in current literature. The study underscores how expert-informed app refinement can enhance the practical impact of digital tools in maternal-child health, particularly for breastfeeding support.

Abstract 004

Designing, Validating, and Acceptance of Prototype Mobile Applications for Type 2 Diabetes (T2dm) Management: A Validation Study

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ABSTRACT

Background and Objectives: Type 2 diabetes mellitus (T2DM) is a widespread chronic condition that demands effective self-management. Mobile health applications can support patients by offering personalized information, medication reminders, and tools for self-monitoring. This study aimed to design, validate, and assess a prototype mobile application tailored for T2DM patients in Malaysia. **Methods:** A three-phase approach was adopted. In Phase 1, a prototype app was developed using Microsoft PowerPoint, based on review and feedback from T2DM patients. Phase 2 involved expert validation, where six subject experts conducted heuristic evaluations and assessed content validity using the Content Validity Index (CVI). In Phase 3, patient acceptance was evaluated through a survey of 30 T2DM patients, guided by the Technology Acceptance Model (TAM) and Health Belief Model (HBM). **Results:** Three main themes were identified in this study: (1) The Service gap in the TB care cascade; (2) The expansion of the professional role of community pharmacists in improving access to TB services; and (3) The availability of resources to facilitate community pharmacy-based TB services. Findings suggested. **Discussion:** The app demonstrated high



usability and acceptability, particularly among elderly users. Features such as medication reminders and dietary tracking were especially valued, reinforcing the importance of personalized tools in enhancing diabetes self-care and engagement. **Conclusion:** The validated prototype mobile app shows promising potential to support T2DM self-management in Malaysia. Its high usability and patient acceptance suggest it could improve adherence, empower patients, and contribute to better health outcomes.

Abstract 005

Healthcare Professionals' and Consumers' Awareness and Understanding of The Black Triangle Scheme and its Influence on Adverse Drug Event Reporting in Australia: A Mixed-Methods Study

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ABSTRACT

Background and Objectives: The Black Triangle Scheme was introduced by the Australian Therapeutic Goods Administration in 2018 to enhance the reporting of adverse drug events (ADEs) related to new medicines. We aimed to evaluate healthcare professionals' (HCPs') and consumers' awareness of the Scheme and its influence on ADE reporting. **Method:** A mixed-methods study was conducted consisting of an online questionnaire followed by one-on-one interview with respondents who indicated that they were willing to participate. The questionnaire asked about awareness and understanding of the Black Triangle Scheme, and about reporting behaviour towards medicines labelled with the black triangle. Descriptive and qualitative data analyses were conducted. **Results:** 405 participants completed the

questionnaire (138 HCPs, 267 consumers) of whom 21 participated in the interviews (11 HCPs, 10 consumers). Half of the HCPs (52%) and a tenth of the consumers (10%) were aware of the Scheme. Among those aware of the Scheme (n=93), 42 reported an ADE related to a medicine with a Black Triangle symbol at least once, and 36 indicated they reported an ADE specifically because the medicine was part of the Scheme. After seeing the Black Triangle symbol and its description, 66% (n = 255/385) stated they would be very likely or likely to report any ADE associated with a medicine carrying the Black Triangle symbol. Qualitative analysis led to four themes: (i) awareness about the Scheme, (ii) noticeability and informativeness of the Black Triangle symbol and its description, (iii) perceived utility of the Scheme, and (iv) influence of the Scheme on future ADE reporting practices. **Conclusion:** Awareness of the Black Triangle Scheme seems particularly low among consumers. Enhancing the reach and impact of the Scheme through better designed product information and communications could improve perceptions of the Scheme and raise incidents of ADE reporting.

Abstract 006

Community Pharmacist-Led Fall Prevention Program (Carefree Seniors®): Impact on Older Adults' Fall Risk Knowledge and Fall Prevention Perspectives

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ABSTRACT

Background and Objectives: Falls are a major health concern for older adults. This study evaluated the effectiveness of CAREFREE SENIORS® program in improving fall risk knowledge and fall prevention perspectives among community-dwelling older adults through pharmacist-led interventions. **Method:** A quasi-experimental cluster-controlled study was conducted in 43 community pharmacies (20 intervention, 23 control) across Malaysia within a single pharmacy chain, involving older adults (≥60 years) taking ≥4 chronic medications. The participants in the CAREFREE SENIORS® program (intervention group) received a structured pharmacist-led intervention comprising fall risk screening, education using



story-based flipchart and booklet, medication review, and referral if needed. The control group received usual care. Fall risk knowledge was assessed using a 22-item Fall Risk Awareness Questionnaire (FRAQ) and fall prevention perspectives were evaluated using a 7-item perspectives questionnaire. These are assessed at baseline, 1-month and 6-month follow-ups. Data were analysed using Generalised Estimating Equation (GEE) with a group-by-time model. **Results and Discussion:** A total of 232 participants were included (n=115 intervention, n=117 control) with a median age of 68 (IQR 64, 74), and 45% female. There was no significant difference observed between the groups for either the baseline FRAQ total score or the fall prevention perspectives questions ($p>0.05$). A significant group-by-time interaction at 1-month follow-up for FRAQ (RR=1.06, 95% CI 1.00–1.12), reflecting a short-term improvement in knowledge in the CAREFREE SENIORS[®] program group. This effect was not maintained at 6-month ($p=0.228$). Motivation domain of the fall prevention perspectives showed significant increases at 1-month (RR=3.19, 95% CI 1.47–6.94) and 6-month (RR=8.30, 95% CI 2.98–23.14), suggesting greater motivation among CAREFREE SENIORS[®] program participants to reduce fall risk.

Conclusion: The CAREFREE SENIORS[®] program improved participants' knowledge and willingness to act. These findings provide evidence supporting the role of community pharmacists in fall prevention efforts and their potential to promote sustained behaviour change among older adults.

Abstract 007

Assessing the Collaboration and Barriers between Community Pharmacists and General Practitioners in Managing Chronic Disease: A Cross-Sectional Study in Melaka

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ABSTRACT

Background and Objectives: Inter-professional collaborative practice (ICP) between community pharmacists (CPs) and general practitioners (GPs) plays a vital role in chronic disease management, aiming to enhance patient care and optimize therapeutic outcomes. This study aimed to evaluate the Physician–Pharmacist Collaborative

Index (PPCI) scores among CPs and GPs in chronic disease management within private primary care settings. The study also explored perceived barriers and potential collaborative tasks in ICP. The study hypothesized that both professional groups would demonstrate equivalent PPCI scores.

Methods: A cross-sectional survey was conducted among CPs and GPs practicing in Melaka using validated PPCI questionnaire based on trustworthiness (TW), role specification (RS) and relationship initiation (RI). Practitioners were identified through official Ministry of Health listings and contacted via email and messaging applications. The invitation included information about the researcher's identity, informed consent, and measures to ensure data confidentiality. The survey was administered online. Descriptive statistics were used for data analysis.

Results and Discussion: Of the 394 practitioners invited, 58 responded (43 CPs and 15 GPs). The mean PPCI score was slightly higher among CPs (5.5) compared to GPs (5.3), with both groups reporting identical RS scores (5.5). CPs recorded higher scores in TW (5.5 vs. 5.4) and RI (5.7 vs. 5.0) domains. CPs identified major barriers to ICP as the absence of dispensing separation, limited confidence, and a lack of professional recognition from GPs. Meanwhile, GPs perceived CPs as being more product-oriented than patient-focused and expressed concerns that CP interventions might conflict with clinical decision-making. Both groups agreed on key collaborative roles such as sharing medication information, monitoring adverse drug reactions, and selecting the most appropriate therapies. **Conclusion:** CPs demonstrated greater collaborative readiness, trust attributes, and proactive engagement in ICP, although both groups acknowledged clearly defined professional roles. These findings offer valuable insights for advancing ICP strategies in chronic disease management within private primary care settings.



Abstract 008

Characterization and Analgesic Effects of a Novel Kratom (*Mitragyna speciosa*) Decoction Formulation Using a Lipid-Based Carrier

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ABSTRACT

Background and Objectives: Kratom (*Mitragyna speciosa*; MS) has gained significant attention for its traditional analgesic properties, particularly due to the alkaloid mitragynine. This study aimed to develop and characterize a novel kratom decoction formulation utilizing a lipid-based carrier system to enhance solubility, stability, and analgesic efficacy. Physicochemical characterization was performed using (FTIR), (DSC), (SEM), and X-Ray Diffraction (XRD) to confirm the interaction between MS decoction and the lipid matrix and to assess changes in crystallinity and thermal behavior. **Methods:** In vivo analgesic activity was evaluated using a rodent hot plate and tail flick models. Male Sprague-Dawley rats (200-250 g) were randomly assigned to receive kratom decoction in formulated and non-formulated MS decoction extract by oral gavage (n = 6/group). An induced hot plate assessed baseline pain sensitivity and tail flick tests 15 minutes before treatment for the control and treatment groups. Antinociceptive responses were evaluated at 0, 15, 60, 75, 90, 105, and 120 minutes post-treatment. **Results and Discussion:** DSC for formulation results in a reduction in the melting point compared to crude decoction extract. FTIR shows no disappearance of the functional group. SEM indicates that MS in its pure standard form is pseudo-crystalline after the formulation becomes homogenous with a more crystalline nature; the same result for XRD means the preparation is more stable. The solubility shows an increase in the preparation of the decoction formulation compared to the decoction extract. The decoction formulation exhibited a significant increase in latency response time compared to unformulated kratom extract and control (p < 0.05). This improvement is attributed to the lipid matrix's enhanced solubility and potential lymphatic absorption. **Conclusion:** The lipid-based kratom decoction formulation established improved physicochemical properties and analgesic efficacy, highlighting its potential

as a more effective alternative for pain management using natural compounds.

Abstract 009

Commanding Antibiotic Strategy: An Economic Evaluation of the Antibiotic Review Form Intervention in an Antimicrobial Stewardship Program at a Malaysian Military Hospital

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ABSTRACT

Background and Objectives: Antimicrobial resistance (AMR) presents a growing threat to global healthcare, primarily driven by inappropriate antibiotic use. Antimicrobial Stewardship Programs (ASPs) are vital to optimizing antibiotic prescribing and minimizing resistance. This study aimed to evaluate the cost-effectiveness and clinical appropriateness of Review Form (RF) intervention implemented at Tuanku Mizan Armed Forces Hospital (TMAFH), Malaysia. **Methods:** A retrospective pre-post study was conducted from June 2022 to June 2023, involving adult inpatients at TMAFH. The RF, introduced in January 2023, required prescribers to provide indications, diagnosis, and justification for continued antibiotic use at 72 hours. Clinical appropriateness was assessed using two criteria: compliance with the NAG 2019 and concordance with C&S results. Data from 79 patients before and 93 patients after the RF implementation were analysed. Costs were calculated for development, implementation, and operation. Cost-effectiveness was assessed using the incremental cost-effectiveness ratio (ICER) per additional patient receiving appropriate treatment and per day reduction in length of hospital stay (LOS). **Results and Discussion:** After the implementation of RF, inappropriate antibiotic therapy decreased from 59.5% to 32.3%, while appropriate therapy increased from 40.5% to 67.7%. The median LOS for patients on inappropriate therapy dropped from 12 days to 10.5 days, and on appropriate therapy, decreased from 16 days to 11 days. There is significant association between RF usage and improved prescribing practices ($\chi^2 = 12.814$, p < .001). The ICER was RM79.70 per additional patient treated appropriately. Each day of reduced LOS saved RM430, yielding a benefit-cost ratio of 17.53—meaning every RM1 spent saved RM18. The



intervention broke even after just two RF uses. **Conclusion:** The RF intervention effectively improved the appropriateness of antibiotic use and reduced hospital stays. It demonstrated strong cost-effectiveness and supports broader adoption within ASP frameworks to enhance patient outcomes, combat AMR, and promote healthcare efficiency.

Abstract 010

Virtual Reality (VR) and Augmented Reality (AR) in Pharmacy Education: Perspectives Among Pharmacists in The Workforce (A Qualitative Study)

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ABSTRACT

Background and Objectives: Augmented Reality (AR) and Virtual Reality (VR) are seen in diverse fields, including entertainment, architecture, and experimentally in education. Further research was required to explore the idea of long-term implementation. This study aims to provide pharmacists with insights into VR/AR implementation in pharmacy education. **Methods:** The study was conducted through semi-structured interviews. Participants comprised of 20 pharmacists from four sectors; community, hospital, academia, and industry. Data collected from interviews, such as transcripts and video recordings, were de-identified and entered into NVivo (Version 14) to extract themes. **Results:** The results are categorized into 3 main themes: Knowledge, Implementation, and Policy. More granular sub-themes were identified based on the frequency with which participants mentioned specific discussion points. In summary, for Knowledge, pharmacists are generally aware of the current landscape of AR/VR and agree on its potential benefits of enhancing the learning experience. Pharmacists considered AR/VR use mainly in creating virtual environments reflecting real-world pharmacist career settings to prepare students before entering the workforce. Pharmacists also provided feedback on possible challenges and strategies to overcome classroom-level implementation of AR/VR. Lastly, for Policy, pharmacists provided insights on future policies such as privacy and access to user data, as well as ideas on funding and long-term sustainability.

Conclusion: In conclusion, this study highlights pharmacists' perspectives from various settings exhibiting a positive reception towards this technology. These insights consider the advantages and disadvantages and can be used to support future studies on implementing AR/VR in pharmacy education.

Abstract 011

Can Learning Experience in Pharmacy School Shape a Competent Leader?": A Cross-Sectional Study

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ABSTRACT

Background and Objectives: Pharmacists require both clinical expertise and strong leadership capabilities to effectively navigate complex healthcare settings. Academic programs and extracurricular activities can enhance students' leadership competencies. This study assesses the impact of the pharmacy academic curriculum and extracurricular activities on leadership skills development from the perspective of pharmacy students and analyzes the mental wellbeing of pharmacy students engaged in leadership roles. **Methods:** A cross-sectional study was conducted among undergraduate pharmacy students (Year 2 until 4) at the International Islamic University Malaysia (IIUM) using an online survey. The questionnaire assessed leadership skills acquisition, perceptions of the pharmacy curriculum, the influence of extracurricular involvement, leadership development based on eleven competencies, and mental wellbeing using the Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS). Data were analyzed using descriptive statistics, Mann-Whitney U test, and Kruskal-Wallis test. **Results:** A total of 183 responses were received, with a majority being female (63.9%) and in their final year (42.1%). 80.3% of students believed that pharmacy curriculum has helped develop their leadership skills with 53.8% believed more leadership -focused courses should be included in the pharmacy curriculum. The findings highlight critical factors impacting the leadership competencies and mental wellbeing of pharmacy students, aligning strongly with the Islamic concept of *wasatiyyah* that emphasizes moderation in all aspects of life. **Conclusions:** The study provides insights into the effectiveness of the pharmacy curriculum and extracurricular activities in fostering leadership skills and the mental wellbeing of pharmacy students. The findings



inform strategies to optimize leadership training in pharmacy education while promoting student wellbeing.

Abstract 012

Strengthening the Teaching and Learning of Pharmaceutical Compounding in Malaysia: A Foundation for Personalized Medicine

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ABSTRACT

Background and Objectives: Pharmaceutical compounding is an integral component of personalized medicine, allowing the preparation of drug products tailored to individual patient needs. In Malaysia, although compounding is introduced in pharmacy curricula, its integration into clinical years remains limited. Upon graduation, most pharmacists are only involved in basic compounding tasks, such as converting solid dosage forms into liquid preparations using commercially available carriers. **Methods:** This literature-based review explores strategies to improve the teaching and learning of pharmaceutical compounding in Malaysian pharmacy schools, with the goal of supporting future healthcare demands aligned with personalized medicine. **Results and Discussion:** Compounding is typically taught during the early years of undergraduate pharmacy education through laboratory-based modules. However, the exposure is often brief, and the training lacks direct clinical context. Interviews and literature search suggest that many local pharmacy graduates feel underprepared to apply compounding skills in real-world settings. Among the important factors include limited access to specialized equipment, variability in teaching methods across institutions and the absence of standardized teaching modules and assessment tools that has contributed to this gap. To overcome these challenges, it is recommended to revise the pharmacy curriculum to incorporate advanced compounding techniques, expands the hands-on training and develop national guidelines to support compounding education for both students and practicing pharmacists. **Conclusion:** Strengthening the teaching and learning of pharmaceutical compounding in Malaysia is essential to support the national agenda for personalised medicine. A more robust and practice-oriented educational

framework can bridge the gap between academic learning and clinical application, ensuring compounding remains a relevant and impactful skill in modern pharmacy practice.

Abstract 013

Knowledge on Geriatric Care and Attitude Towards Elderly Among Health Science Students in Malaysia

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ABSTRACT

Background and Objectives: With the growing elderly population, improving our healthcare system with sufficient personnel and quality services is crucial. By 2040, Malaysia is expected to have seven million elderly individuals, yet there is a notable shortage of trained geriatric healthcare professionals, partly due to a lack of exposure and interest among health science students in university. Thus, this study was conducted to evaluate health science students' knowledge on geriatric care and their attitude towards the elderly in Malaysia. **Methods:** A total of 113 health science students from various programs and institutions across Malaysia participated in this cross-sectional study between October 2024 to January 2025. A structured online questionnaire that included validated instruments such as Geriatric Attitude Scale (GAS) and Paltrow's Fact on Aging Quiz 1 (FAQ 1) were utilised. Descriptive and inferential analysis with p-values < 0.05 were performed to determine the significant difference between variables. **Results and Discussion:** The overall knowledge score of the health science students indicates they had a moderate level of knowledge (mean score: 14.7 ± 1.98) out of 25 and generally positive attitude toward elderly (mean score: 35.69 ± 4.87) out of 50. The interest level for pursuing geriatric specialization ($p = 0.03$) indicated as a significant factor that influenced the attitude towards elderly while female students had significantly higher attitude scores ($p < 0.01$) compared to male students. Despite that, the knowledge on geriatric care was not significantly associated with any of the sociodemographic variables. **Conclusion:** Health science students showed a moderate level of knowledge and a positive attitude towards the elderly. Enhancing geriatric education and providing more exposure to the care of elderly patients could lead to an improvement



in their knowledge and attitudes, thereby increasing students' interest and competency in future geriatric care in Malaysia.

Abstract 014

Bridging the Gap in Anti-Doping: Malaysian Community Pharmacists' Views on Sports Pharmacy Services

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ABSTRACT

Background and Objectives: Pharmacists are emerging as key healthcare professionals in sport, with the potential to prevent inadvertent doping and ensure athlete safety. However, little is known about their readiness and perspectives regarding sports pharmacy services. This mixed-method study aimed to evaluate the knowledge, perception, and practices of Malaysian community pharmacists in sports pharmacy, and to explore their views on potential contributions and challenges in providing such extended pharmacy services (EPS). **Methods:** A cross-sectional survey was conducted among community pharmacists across Malaysia using a self-administered questionnaire, followed by semi-structured online interviews. All participants were fully registered pharmacists under the Pharmacy Board of Malaysia, with at least one year of experience in community pharmacy. Quantitative data were analysed descriptively, while qualitative data were transcribed verbatim and analysed thematically. **Results and Discussion:** Survey findings showed that participants (n=384) had moderate knowledge of doping-related issues (median score: 52), but 65.9% were unaware that inadvertent doping constitutes a violation. Despite this, participants held positive perceptions of their role in doping prevention. Interestingly, 20.8% of

respondents admitted having approached by athletes for advice, yet only 2.1% had attended sport-related workshops or training. Follow-up interviews (n=11) revealed pharmacists' willingness to contribute through education, appropriate medication and supplement use, and athlete support. However, barriers were identified, namely low public awareness and recognition, inadequate training, lack of policies and guidelines, limited support from professional societies and institutions, insufficient government recognition, and lack of facilities and financial reimbursement. Prior exposure to anti-doping education enhanced awareness and role clarity. Participants suggested structured training modules covering delivery methods, core competencies, and confidence building. **Conclusion:** Community pharmacists recognize their potential role as sports pharmacists in supporting clean sport initiatives but face knowledge gaps and systemic barriers. This study highlights the need for targeted anti-doping education, institutional collaboration, and policy support to empower pharmacists in delivering EPS within the sports domain.

Abstract 015

Knowledge on Geriatric Care and Attitude Towards Elderly Among Health Science Students in Malaysia

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ABSTRACT

Background and Objectives: With the growing elderly population, improving our healthcare system with sufficient personnel and quality services is crucial. By 2040, Malaysia is expected to have seven million elderly individuals, yet there is a notable shortage of trained geriatric healthcare professionals, partly due to a lack of exposure and interest among health science students in university. Thus, this study was conducted to evaluate health science students' knowledge on geriatric care and their attitude towards the elderly in Malaysia. **Methods:** A total of 113 health science students from various programs and institutions across Malaysia participated in this cross-sectional study between October 2024 to January 2025. A structured online questionnaire that included validated instruments such as Geriatric Attitude Scale (GAS) and Palmore's Fact on Aging Quiz 1 (FAQ 1) were utilised. Descriptive and



inferential analysis with p -values < 0.05 were performed to determine the significant difference between variables. **Results and Discussion:** The overall knowledge score of the health science students indicates they had a moderate level of knowledge (mean score: 14.7 ± 1.98) out of 25 and generally positive attitude toward elderly (mean score: 35.69 ± 4.87) out of 50. The interest level for pursuing geriatric specialization ($p = 0.03$) indicated as a significant factor that influenced the attitude towards elderly while female students had significantly higher attitude scores ($p < 0.01$) compared to male students. Despite that, the knowledge on geriatric care was not significantly associated with any of the sociodemographic variables. **Conclusion:** Health science students showed a moderate level of knowledge and a positive attitude towards the elderly. Enhancing geriatric education and providing more exposure to the care of elderly patients could lead to an improvement in their knowledge and attitudes, thereby increasing students' interest and competency in future geriatric care in Malaysia.

Abstract 016

Combined Oral Contraceptive Pills: Knowledge, Attitude and Practice among Users in Perak

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ABSTRACT

Background and Objectives: Despite the high effectiveness of combined oral contraceptive pills (COCP) with correct use, non-adherence remains a concern, often due to limited knowledge, negative attitudes, and inconsistent practices, leading to contraceptive failure. Assessing knowledge is vital, as misunderstandings can impact usage. Attitudes influence adherence, while actual practices reflect real-world effectiveness. This study aims to evaluate knowledge, attitudes, and practices (KAP) related to COCP use and examine their associations. **Methods:** A cross-sectional, multi-centre study was conducted from 1st April to 30th June 2023 among COCP users attending government health clinics across 12 districts in Perak. Eligible participants were at least 3-month literate COCP users. A self-administered questionnaire comprising demographics, COCP-related information, and assessments of knowledge, attitude, and practice (KAP), adapted from

existing literature and refined for clarity. Adherence was measured using the Medication Adherence Report Scale (MARS). Descriptive statistics summarized participant characteristics and KAP levels. KAP was categorized using modified Bloom's cut-off points. Pearson correlation and one-way ANOVA assessed KAP associations, while Chi-square and independent t-tests examined factors affecting adherence.

Results: Among 588 respondents, most were aged 30 to 39 ($n=313$, 53.2%), had studied in secondary school before ($n=428$, 72.8%), being housewives ($n=360$, 61.1%), from low-income group ($n=457$, 77.7%), multigravidas ($n=431$, 73.3%) and on the pills for at least one year ($n=315$, 53.6%). Half had a moderate knowledge ($n = 339$, 57.7%) and attitude ($n = 336$, 57.1%), while most demonstrated a good practice ($n = 508$, 86.4%). A moderate, significant correlation was found between attitude and practice ($r=0.402$, $p<0.05$) and practice and adherence ($r=0.501$, $p<0.05$). Age, occupational status, and income influenced KAP. **Conclusion:** KAP significantly affects COCP adherence. Positive practice contribute to better pill-taking behavior, while knowledge and attitude gaps remain a barrier. Tailored contraceptive education addressing these gaps and aligning with users' needs is essential to improve adherence and reproductive outcomes.

Abstract 017

International Normalized Ratio (INR) Patient Self-testing in Malaysia: Stakeholders' Point of View

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ABSTRACT

Background and Objectives: Patient self-testing International Normalized Ratio (INR) involves patient or caregiver performing the blood sampling and testing using point of care testing (POCT), while the healthcare provider will decide the patient's warfarin dose and the next testing date. Studies showed that self-testing INR improved time within the therapeutic range (TTR), patient satisfaction and quality of life. Although self-testing INR has been proven beneficial for patients, it is necessary to understand its applicability to the local Malaysian population. This study aims to obtain insights, from Malaysian stakeholders' point of view towards the implementation of patient self-testing



INR in Malaysia. **Methods:** This is a qualitative study using a semi-structured interview guide, to gain a detailed understanding on the unexplored topic of implementation of self-testing INR using POCT in Malaysia. Seventeen (17) stakeholders, including policy makers, pharmacists, medical doctors, medical assistants, patients, and a caregiver, were interviewed. All individual interviews were audio-recorded and transcribed verbatim. The thematic inductive method was used to analyse the data. **Results and Discussion:** The perceived benefits included shorter waiting times, lower hospital expenses, increased patient empowerment, more efficient use of the workforce, and potential reductions in tangible and intangible patient cost. The main barriers identified were the cost of implementation, patients' ability to perform self-testing, and a lack of resources and workforce. INR monitoring in Malaysia has the potential to be decentralized from public tertiary care to primary care with the involvement of public health clinics, general practitioners and community pharmacists. **Conclusion:** This study findings suggest that stakeholders support self-testing INR in patients on long-term warfarin therapy and consider it a feasible approach. Implementing INR self-testing requires careful consideration of various aspects of convenience, safety and effectiveness.

Abstract 018

Practising Care or Performing Roles? Reimagining Person-Centred Primary Care Through the Lens of Pharmacists

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ABSTRACT

Background and Objectives: Person-centred care (PCC) is integral to high-quality primary healthcare delivery, requiring providers and their organisations to internalise and operationalise PCC principles. This study aimed to evaluate the extent to which PCC is practiced among primary healthcare providers in Malaysia, and to explore associations between provider characteristics, work environment, and organisational support in shaping PCC delivery. **Methods:** A cross-sectional mixed-methods study was conducted across public primary healthcare clinics in the central zone of Malaysia (Selangor and Kuala Lumpur-

Putrajaya). A validated 59-item questionnaire captured three PCC domains: healthcare provider attributes (prerequisites), care environment, and care processes. Responses from 654 pharmacists and assistant pharmacists were analysed. Quantitative data were stratified by region, clinic type, and years of service. Free-text responses were thematically analysed to enrich quantitative findings. **Results and Discussion:** Among the 17 constructs, 'Developed interpersonal skills' (Mean: 5.77, SD: 0.798), 'Knowing self' (Mean: 5.31, SD: 1.051) scored highest, reflecting strong individual readiness for PCC. Lower scores were observed for 'Supportive organisational systems' (Mean: 4.49, SD: 1.303) and 'Shared decision making' (Mean: 4.62, SD: 1.201), highlighting limitations in systemic and cultural support. Significant variations were found across job roles and seniority levels, suggesting that hierarchical structures and differing work cultures influence shared decision-making and inclusivity. **Conclusion:** Successful PCC implementation in primary care demands more than individual provider commitment; it requires coordinated organisational transformation. This includes building supportive systems, promoting team-based care, and fostering inclusive decision-making practices. Addressing disparities across professional roles and seniority levels is essential to achieving a sustainable PCC culture.

Abstract 019

Reducing Medication Burden in Ageing Populations: A Systematic Review and Meta-Analysis of Deprescribing Interventions from Randomized Controlled Trials

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ABSTRACT

Background and Objectives: The rising population expectancy has experienced a notable increase in multimorbidity, leading to multiple medication uses among older adults. Various concerns have been raised regarding medication safety among older adults. Deprescribing has



been proposed as a process of withdrawal of inappropriate medications, which could reduce the medication burden. This review aims to assess the various types of deprescribing and the outcomes among older adults. **Methods:** The electronic search for original articles was conducted using the following electronic databases: MEDLINE, EMBASE, Scopus, Google Scholar, PsycINFO, Global Health, Cochrane Central Register of Controlled Trials (CENTRAL), and Cochrane Methodology Register). The types of deprescribing interventions were assessed, and the outcomes on older adults were compared with those of the non-intervention group. The risk of bias was performed using the Robins tool. **Results and Discussion:** A total of 18 randomized controlled trials (RCTs) were extracted after a selection from the full-text screening. Various deprescribing interventions were utilized, such as medication reviews, medication reviews with electronic support, academic detailing, pharmacist-led deprescribing, computerized decision-making tools, structured education, patient-centered communication, and coordinated medication risk management. Quantitative analysis showed that two studies showed a statistically significant impact of deprescribing on the number of patient falls. (Odds ratio 0.67; confidence interval 95% [0.46, 0.98] I² = 0%, p = 0.04). A sensitivity analysis was conducted on the mean number of medications and hospitalization outcomes. Deprescribing was significant in reducing the mean number of medications among older adults (Mean Difference 0.17; confidence interval 95% [0.03, 0.32] I² = 0%, p = 0.02). Additionally, deprescribing was significant in reducing the number of hospitalized older adult patients (Risk ratio 1.40; confidence interval 95% [1.08, 1.80] I² = 0%, p = 0.01). **Conclusion:** Deprescribing has demonstrated a reduction in reducing falls and enhancing health outcomes in this population. Medication review remains a significant component of deprescribing interventions within the healthcare system.

Abstract 020

Prevalence and Factors Associated with the Disposal of Unused Medicines: A Systematic Review

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ABSTRACT

Background and Objectives: We aimed to systematically review cross-sectional studies of unused medicines that described the prevalence, types of unused medicine, disposal practices and factors associated with unused medicines. **Methods:** We conducted searches in Medline, EMBASE, CINAHL, Web of Science, Scopus, and Google Scholar. We identified and selected cross-sectional studies published between database inception and June 2023 examining the prevalence of unused medicines and factors associated with their disposal. **Results and Discussion:** Fifty-seven studies were included in the review. The prevalence of unused medicines ranged from 21.4 to 98.0% (mean = 63.8%). The top reason people had unused medicines was because their conditions improved (40.0%). The most common method to dispose of unused medicines was in the environment (66.9%) while a smaller percentage (12.9%) returned them to medicine take-back facilities. We found that there was a positive correlation between returning unused medicines and knowing how to dispose of them properly [(r(29) = 0.50, p = 0.006)]. However, actual disposal practice did not correlate with knowing about environmental risks [r(31) = -0.17, p = 0.4] or willingness to return the unused medicines [r(13) = 0.40, p = 0.20]. **Conclusion:** The prevalence of unused medicines and how they are disposed varies between countries. The improper disposal of unused medicines is not attributed solely to the knowledge about the risks and attitudes of consumers. We need more research to understand the impact of legislation and the availability of medicine take-back facilities.



Abstract 021

Assessing Clinical Burden of Respiratory Syncytial Viral Infection among Older Adults in Malaysia

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ABSTRACT

Background and Objectives: Respiratory syncytial virus (RSV) is a common, well known and highly infectious virus that causes respiratory infections in children, adolescent and also in adults. However, prevalence, incidence rate and the clinical consequences of RSV among older individuals in Malaysia is not well explored and understood. This research aims to estimate the proportion, clinical outcomes, and risk factor related to RSV infection among older adults in Malaysia, using a retrospective cohort study design.

Methods: The study included all individuals in Malaysia over the age of 60 who were hospitalized and diagnosed with RSV infection from January 2013 to December 2023, based on data from the Malaysian Health Data Warehouse (MyHDW). Specifically, the study aimed to describe the impact of RSV in this population and to fill existing gaps in the literature with valuable data, which had been limited due to a lack of research focusing on this specific demographic. Secondary objectives included determining risk factors associated with RSV infection and evaluating clinical outcomes such as duration of hospital stay and mortality rate.

Results and Discussion: This research demonstrated that the proportion of RSV-related admissions is comparatively low, 0.00025%, indicating 2.5 per 100,000 populations which could be the consequence of many factors including sample size changes, seasonal variations, or geographic location. The study also revealed hospitalization stay and underlying disease showed significant association with RSV infection. **Conclusions:** Thus, the findings provided valuable insights into the statistics, hospitalization rates, and clinical burden of RSV infections among the older population in Malaysia. These results are expected to form a foundation for subsequent research and assist healthcare policymakers in developing appropriate strategies to address the effects of this viral disease.



POSTER PRESENTATION



Abstract P01

Community Pharmacists' Views on Their Roles in Mental Health Screening and Management in Malaysia

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ABSTRACT

Background and Objectives: Community pharmacists (CPs) are vital as primary healthcare providers, particularly in the screening and management of mental health issues. This study aimed to explore community pharmacists' (CPs) views on managing patients seeking mental health support and the potential challenges they encounter in delivering mental health services. **Methods:** Semi-structured interviews were conducted with 20 CPs. Verbatim transcripts were analysed thematically. **Results and Conclusion:** Participants emphasized the importance of high-quality resources, comprehensive training and standardized tools for CPs to effectively provide mental healthcare services. Challenges identified were a lack of knowledge and skills, the absence of screening tools or guidelines, and the presence of social stigma and conservatism, particularly among older individuals with mental health issues. The study findings provided useful insights into the current scenario of mental health screening and management in community pharmacies. This study underscores the willingness of community pharmacists to take on a primary role in mental health services. In order for this program to be successful, collaboration with relevant stakeholders is crucial, aligning with national strategic plans.

Abstract P02

Facilitating Chronic Care: Community Pharmacists' Perspectives on Repeat Medicines Supply

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ABSTRACT

Background and Objectives: Frequent visits by patients with chronic diseases to public health facilities in Malaysia for repeat medicines supply aggravates the existing congestion at the facilities and work burden of the healthcare providers. This study aims to examine the perspectives of community pharmacists in providing repeat medicines supply to patients with chronic diseases from public health facilities. **Methods:** A cross-sectional observational study was conducted among community pharmacists in Malaysia. List of community pharmacies in the country was obtained from the Pharmaceutical Services Division public domain. Weblink to the online questionnaire was sent to the retrieved contacts, inviting eligible community pharmacists to participate in the study. **Results and Discussion:** Of 433 community pharmacists who responded to the survey, most perceived that repeat medicines supply by community pharmacies to patients with chronic diseases from public health facilities would be convenient for patients in terms of time (96.3%), location (96.3%), and saving on transportation cost (88.5%). Most also perceived that community pharmacy is a suitable place to provide the service (94.2%) and viewed that community pharmacists should be remunerated for providing the service (90.5%). Less than half of the community pharmacists perceived barriers listed were valid including increased workload (44.8%) and operating costs (39.7%), and lack of space at the community pharmacy (43.0%). Among the facilitators identified by participants were timely reimbursement for medicine costs (98.4%), establishment of a standard guideline (96.3%) and pharmacist fees (95.2%). Most community pharmacists (88.4%) were willing to participate in the provision of repeat medicines supply service. There was no significant association between demographic variables and willingness to participate. **Conclusion:** Community pharmacists hold a favourable perspective towards their involvement in repeat medicines supply to patients with chronic diseases from public health facilities. Careful consideration of the barriers and facilitators reported will ensure successful implementation of the service.



Abstract P03

Exploring Medication Refill Patterns and Factors Influencing Adherence among Hypertensive Patients through Electronic Prescription and Dispensing Data

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ABSTRACT

Background and Objectives: While the use of electronic prescriptions (e-prescriptions) has emerged as a technological advancement in healthcare and their use being considerably widespread, its use in potentially improving patient medication adherence has not been well established. This study aimed to investigate the patterns of medication refill and association between medication adherence and factors related to patient, medication and healthcare-system. **Methods:** Employing a retrospective observational design, 2023 dispensation data from 200 patients who received antihypertensive medications (AHM) were analyzed. Patients were categorized based on the adherence levels (achieved > 80% PDC and < 80% PDC) and their association with patient-related and medication-related independent variables evaluated. The healthcare system-related factors were the waiting time at the public clinic, financial burden caused by the price of the medications and user satisfaction towards the service. **Results and Discussion:** Mean age was 54.3 years: 54.5% were male and 45.8% were female. In terms of pharmacotherapy, 172 (86%) patients were on monotherapy, 24 patients (12 %) were on Single Pill Combinations, SPC and another 4 patients were on free-drug combinations, FC therapy. The commonest monotherapy agent was the long-acting calcium-channel blocker, amlodipine. Of 200, 140 (70%) had good PDC \geq 80% and 60 had < 80% PDC. Perceived financial burden (by medication prices) was the only significant PDC predictor. **Conclusion:** Out-of-pocket payment willingness was the main predictor of the e-prescription utilization at community pharmacy by hypertensive patients. Alternative financing schemes could bring ease to patients and facilitate public-private partnerships to increase the adoption of e-prescriptions to optimize medication management and patient outcomes.

Abstract P04

A Retrospective Study on Evaluation of Anti-Hypertensive Drug Utilization and Cost in SASMEC

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ABSTRACT

Background and Objectives: Hypertension is the primary modifiable risk factor for cardiovascular disease (CVD) and remains a major global health concern. The prevalence of hypertension in Malaysia increased from 35.3% in 2015 to 49.4% in 2021, indicating a growing public health burden. Given the economic implications of long-term antihypertensive medication use, understanding prescribing patterns and comparing cost is crucial in optimizing hypertension management. **Methods:** A retrospective study was conducted at the Sultan Ahmad Shah Medical Centre (SASMEC) in Kuantan, analyzing the medical records and prescription data of 100 hypertensive patients from January 2024 to December 2024. Data were collected from SASMEC's electronic health records, including demographic information, prescribed antihypertensive medications, comorbidities, and associated drug costs. Descriptive statistical analysis was performed using Jamovi, and the costs of antihypertensive medications were calculated based on the price per tablet and daily dosing regimen. **Results and Discussion:** The analysis showed that combination therapy was predominant, with 90% of patients requiring multiple antihypertensive agents for effective blood pressure control, while only 10% received monotherapy. Calcium Channel Blockers (CCBs) were the most frequently prescribed class, particularly Felodipine (36 prescriptions) and Amlodipine (35 prescriptions), followed by Angiotensin-Converting Enzyme Inhibitors (ACEIs) such as Perindopril (25 prescriptions) and Beta-Blockers like Bisoprolol (29 prescriptions). The cost analysis revealed that monotherapy was generally more affordable, with Losartan (RM 0.12 per tablet) and Amlodipine (RM 0.116 per tablet) being the least expensive. In contrast, combination therapy significantly increased treatment costs, with Valsartan-based combinations being the most expensive (e.g., Felodipine + Valsartan at RM 6.725 per day). **Conclusion:** CCBs (Felodipine, Amlodipine) and ACE inhibitors (Perindopril) are the most frequently used drugs. Single therapy is cheaper, but combination therapy is often required for better blood pressure control.



Abstract P05

Trends in Antibiotic Consumption and Multidrug-Resistant Organism Emergence in a Malaysian Tertiary Hospital (2022–2024)

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ABSTRACT

Background and Objectives: Multidrug-Resistant Organism (MDRO) pose a significant public health threat and significantly contribute to morbidity and mortality in Malaysia. Understanding the role of antibiotic use in MDRO emergence is vital to support effective Antimicrobial Stewardship (AMS) and Infection Prevention and Control (IPC) programs. This study evaluated the trends in antimicrobial consumption and the corresponding emergence of MDROs at Tuanku Mizan Armed Forces Hospital between 2022 and 2024. **Methods:** A retrospective study was conducted using antimicrobial consumption data expressed as defined daily doses (DDD) per 100 admissions and MDRO incidence rates per 100 admissions. The association between antibiotic use and MDRO emergence was analyzed using the Jonckheere-Terpstra (J-T) trend test and Pearson correlation. Statistical significance was defined as $p < 0.05$. **Results and Discussion:** Following the implementation of the Antimicrobial Stewardship Programme (AMS) in mid-2022 in this hospital, the use of broad-spectrum antibiotics—extended-spectrum cephalosporins (ESC), fluoroquinolones (FQ), polymyxins, and glycopeptides—declined. However, the incidence of MRSA, ESBL-producing organisms, multidrug-resistant *Acinetobacter baumannii*, and carbapenem-resistant Enterobacteriaceae (CRE) increased during the study period. Significant positive correlations were observed between:

- glycopeptide use and MRSA ($r = 0.988$, $p = 0.038$),
- ESC ($r = 1.0$, $p = 0.010$), FQ ($r = 1.0$, $p = 0.015$) and polymyxins ($r = 0.999$, $p = 0.024$) with *Acinetobacter baumannii*.

These findings suggest that antibiotic use reduction alone is insufficient to curb resistance trends, highlighting the multifactorial nature of MDRO emergence, including environmental persistence, lapses in infection control and genetic resistance mechanisms. **Conclusion:** This study

reinforces the need for a multifaceted approach, combining AMS with effective IPC interventions, to reduce MDRO incidence in healthcare settings.

Abstract P06

Evaluation of Carbapenem Prescribing Practices, Patterns, and Quality at Hospital Pakar Universiti Sains Malaysia: A Retrospective Study

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ABSTRACT

Background and Objectives: Carbapenems are potent antibiotics reserved for treating severe or multidrug-resistant infections. However, inappropriate prescribing can accelerate antimicrobial resistance (AMR). Hospital Pakar Universiti Sains Malaysia (HPUSM) recently reported as one of the highest carbapenem user nationally, raising concern over prescribing quality. This study aimed to evaluate carbapenem prescribing practices at HPUSM by analysing usage patterns, adherence to clinical guidelines, and renal dosing adjustments. **Methods:** A retrospective review was conducted on 925 prescriptions from January to December 2024 from initial set of 1061 prescriptions. Data included demographics, prescription type, dosing appropriateness, and clinical setting. Statistical analysis was performed using IBM SPSS Statistics, Version 28.0. Chi-square, Fisher's exact test, independent t-tests, and one-way ANOVA were applied with significance set at $p < 0.05$. **Results and Discussion:** Meropenem was the most prescribed agent (90.6%), with empirical use accounting for 71.4% of prescriptions. Most prescriptions (75.6%) originated from non-ICU settings. Overall, 69.2% of carbapenem doses were appropriately adjusted for renal function. ICU patients were more likely to receive correct renal dosing ($p = 0.036$). Patients with incorrect dosing were significantly older (mean 60.48 vs. 56.04 years, $p = 0.001$). Renal dose appropriateness varied significantly by carbapenem type ($p = 0.005$), with ertapenem showing the highest accuracy (78.6%) and imipenem the lowest (0%). Significant associations were also observed between carbapenem type and clinical setting ($p = 0.049$), and between carbapenem and prescription type ($p = 0.001$). **Conclusion:** While carbapenem prescribing at HPUSM was



largely appropriate in terms of indication, issues remain with renal dose adjustments, particularly in elderly. This highlights the need for continual education and the implementation of effective antimicrobial stewardship programs to improve prescribing practices, reduce AMR, and ensure better clinical outcomes. Further research is recommended to assess the effectiveness of targeted stewardship interventions in the clinical setting.

Abstract P07

Collaborative Approaches to Chemotherapy Safety – Enhancing Second Independent Checks in Oncology-Haematology Wards

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ABSTRACT

Background and Objectives: Chemotherapy medications are high risk medications with the potential to cause significant harm if administered inappropriately. Therefore, proactive preventive measures are pivotal to reduce the risk of chemotherapy related medication errors (CRME). This study shows that the implementation of second independent checking can significantly reduce the number of CRME. **Methods:** A root cause analysis of CRME incidents (January 2021 – April 2023) was conducted by pharmacy, in collaboration with the Nursing and Quality departments. The primary root cause identified was the absence of a second independent check during chemotherapy administration. Hospital policies were reviewed and benchmarked against local and international standards, including guidelines from the Ministry of Health, Joint Commission International (JCI), and the American Society of Clinical Oncology/Oncology Nursing Society (ASCO/ONS). Pre-training audits assessed current practices among healthcare practitioners (HCPs) across all adult Oncology-Haematology wards. A structured training program on second independent checking was then implemented, followed by weekly audits and subsequently monthly audits upon reaching satisfactory compliance. Audit criteria included patient identification, drug name and dose, drug appearance, line attachment, administration rate and sequence. **Results and Discussion:** The pre-training audit (n=36 HCPs) revealed suboptimal compliance: 56% verified patient identity against the original prescription, 53% checked administration rate, 61% verified drug appearance, and 50% confirmed correct line attachment. Over a 7-month period post-training, compliance steadily improved across all audit criteria, reaching 100% (n=41) in the last two months.

This improvement initiative correlated with a 50% reduction in CRME in 2024. **Conclusion:** Enforcing compliance with second independent checking significantly enhances chemotherapy medication safety. A multidisciplinary approach involving training, awareness-building, and continuous audit is critical to sustaining this improvement and preventing patient harm.

Abstract P08

Impact of Patient Own Medication (POM) Risk Assessment Done by Pharmacist during Patient Hospital Admission on Patient Safety: A Retrospective Observational Study

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ABSTRACT

Background and Objectives: Patient Own Medication (POM) brought to hospital by patients may be a valuable resource if properly assessed. This is because inaccurate medication history during hospital admission poses risks such as duplication, omissions, adverse drug reactions (ADRs), and treatment delays. In this context, pharmacist-led risk assessments serve a vital role in identifying potential medication-related problems and enhancing patient safety via assessing the medication brought by patient. This study aims to evaluate the impact of pharmacist-conducted POM risk assessments during patient admission on medication safety and clinical outcomes. **Methods:** A retrospective observational study was conducted involving 2,358 patients admitted to the hospital via admission counter from August 2023 until April 2024. Data collected included type and frequency of identified medication-related risks and pharmacist interventions. Risk categories included medication omission, improper storage, compliance issues, incorrect prescriptions, drug-drug interactions, new ADRs/allergies, and therapeutic duplications. Data were analyzed descriptively. **Results and Discussion:** Among the total patients assessed, 1,595 (67.6%) brought their own medications and frequently identified issue was omission of medication (31.95%), followed by improper storage (25.19%) and compliance concerns (11.17%). Other findings included new ADRs or allergies (10.91%), therapeutic duplications (0.26%), and expired medications (2.08%). These interventions highlight the critical role pharmacists play in mitigating medication-related risks during transitions of care. **Conclusion:** Pharmacist-led POM risk assessments during



hospital admission significantly improved patient safety by identifying and resolving medication-related problems, with medication omission being the most prevalent. Standardizing this practice can prevent adverse drug events, optimize therapy, and ensure continuity of care. Future research should focus on multi-center validation and long-term impact on clinical outcomes.

Abstract P09

Knowledge, Attitude and Practice (KAP) Towards Antibiotic Use and Its Resistance Among the General Public in Klang Valley, Malaysia

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ABSTRACT

Background and Objectives: Antibiotics use has increased significantly throughout the years leading to a high percentage of misuse and overuse in Malaysia which causes an increased trend of antibiotic resistance (ABR). Our hypothesis is the general public has a low level of KAP towards antibiotic use and its resistance. This study aims to determine the knowledge, attitude and practice (KAP) towards antibiotics use and its resistance among the general public in Klang Valley, Malaysia. **Methods:** A cross-sectional study was conducted using a pre-validated questionnaire that comprised sections of socio-demographic details, questions regarding knowledge of antibiotics use, attitude of the public and practices towards the antibiotic's use including Klang Valley residents who were ≥ 18 years and could speak English language. Prior to the distribution of questionnaire, participants were asked about their English language proficiency and understanding. Upon meeting the all requirements, the questionnaire was distributed among the study participant's through email and social media. All collected data was analysed by SPSS software using version 27.0. Chi-square test was used to determine the association between socio-demographic variables and KAP whereas Spearman test was used to identify the correlation between KAP. **Results and Discussion:** A total of 408 participants were recruited and the study found that half of participants (53.4%) had a moderate level of KAP towards the antibiotic use. The results were also statistically significant within the residing area particularly due to higher educational levels that enhanced their KAP towards antibiotic use. **Conclusion:** This study provided us with baseline evidence about the KAP regarding antibiotic use among the general public in

Malaysia. Hence, it will be useful in guiding further interventions to improve awareness about antibiotics use and enhance antimicrobial stewardship in our community.

Abstract P10

Economic Burden of Chronic Kidney Disease in Patients with Type 2 Diabetes: Evidence from Malaysian Public Hospitals

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ABSTRACT

Background and Objectives: Chronic kidney disease (CKD) is a progressive and costly complication among individuals with type 2 diabetes (T2D), yet data on its economic burden across CKD stages remain limited in Malaysia. This study aimed to estimate the annual direct medical cost of CKD care across stages in patients with T2D from two public healthcare providers' perspective. **Methods:** A retrospective cohort analysis was conducted using medical records from two tertiary hospitals in Malaysia. Adult patients with T2D and CKD (Stages 1-5) between 2010 and 2021 were included. Cost components including specialist consultations, inpatient, procedures, drugs, laboratory and diagnostic tests, and dialysis were extracted and analyzed by CKD stage. All costs were reported in Malaysian Ringgit (RM) and adjusted to 2025 values. Descriptive statistics were used to summarize demographic characteristics and annual cost distributions. **Results and Discussion:** A total of 1,444 patients were included. The median age was 54 years, and 52.2% were female. The mean annual direct medical cost increased with CKD severity, ranging from RM 2,839.42 (Stage 1), RM 3,377.95 (Stage 2), RM 4,266.51 (Stage 3a), RM 4,293.20 (Stage 3b), RM 5,225.98 (Stage 4), and RM 14,498.80 (Stage 5). Medications accounted for the highest share of total costs (54.7%), followed by specialist consultations (15.5%), laboratory tests (12.3%), diagnostic tests (6.9%), dialysis (6.2%) and inpatient services (4.3%). Notably, drug therapy and specialist consultations dominate expenditures in the earlier CKD stages, while dialysis drives costs in late-stage CKD, accounting for over 80% of total costs in Stage 5. Early identification and optimized specialist management of CKD in T2D may reduce long-term reliance on costly



inpatient and dialysis care. **Conclusion:** CKD imposes a substantial financial burden in patients with T2D, with costs escalating at advanced stages. Early intervention and efficient resource allocation are key to limit disease progression and economic strain.

Abstract P11

Use of Biodegradable Face Masks and Its Effects towards the Environment: A Systematic Review

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ABSTRACT

Background and Objectives: During the COVID-19 pandemic, the usage of face masks has surged, indirectly causing an increase in environmental pollution due to improper disposal. This review aimed to determine the feasibility of face mask filters from biodegradable materials with respect to filtration efficiency, air permeability and degradation ability. **Methods:** The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) statement were adapted in the review. Two databases, Scopus, and Web of Science were used. Original articles in English, between 2019 to 2022 were included in the search. The search term keywords were related to biodegradable, mask, “personal protective equipment”, degradation, filters and environment. The search terms used were [biodegradable AND (mask* OR “personal protective equipment”)]. After retrieving an initial number of articles, further screenings were done to exclude articles that did not meet the inclusion criteria. **Results and Discussion:** 57 articles were initially retrieved that were then screened on the title, abstract and removing duplicates. A full-text screening was conducted, leaving 14 articles for the review. All 14 articles reviewed showed the biodegradable masks achieved filtration efficiency of at least 86% or higher for particle sizes ranging from 0.2µm up to 3.0µm. Seven of the articles had data regarding air permeability tests which showed a range of pressure drop, from 59Pa to 119Pa. Five of the articles contained data regarding the degradation ability which revealed the component materials were able to degrade completely within at least a month when exposed to the environment. **Conclusion:** Biodegradable face masks can filter out foreign particles well with the added benefit of being able to degrade within a month. Biodegradable face

masks may replace non-biodegradable masks to reduce environmental burden.

Abstract P12

Optimizing Potassium Chloride Injection Management in Critical Care Units: Balancing Safety and Accessibility

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ABSTRACT

Background and Objectives: Concentrated Potassium Chloride (KCl) injection is universally recognized as a high-risk medication associated with potential fatal outcomes arising from inadvertent or incorrect administration, including dosing miscalculations or improper mixing. While guidelines advocate limiting its floor stock, immediate access remains vital for management of life-threatening hypokalemia in critical care. This study outlines strategic measures implemented in the critical care units of a quaternary private hospital to reconcile these competing priorities. **Methods:** A series of interventions were implemented across 5 critical care units (ICU, CCU, HDU, 3C HDU, PICU), following multidisciplinary (pharmacy, intensivist, nursing, Information Technology, Quality Resources teams) consensus and collaboration. Interventions included: (1) replacing concentrated KCl ampoules with ready-to-administer concentrated KCl preparations (0.75g/100mL, 0.75g/50mL, 1.5g/50mL) as floor stock for emergency use; (2) controlled access via barcode scanning through automated dispensing cabinets (ADC) stationed across critical care units; (3) color-coded labels and distinct electronic naming conventions to mitigate look-alike/sound-alike (LASA) risks; (4) applying a unique tag to the KCl 1.5g/50mL preparation to emphasize strength variation; (5) dedicated storage locations in both central pharmacy and ADCs; (6) alert messages reinforcing safe administration upon ADC withdrawal; and (7) targeted training to all critical care nurses. **Results and Discussion:** Between April and December 2024, 26 emergency KCl administrations in critical care units were recorded. All processes- retrieval, administration and refill were executed accurately, with zero reported medication errors. Ready-to-administer concentrated KCl preparations were consistently accessed via ADC and administered within 10 minutes, enabling timely interventions. These initiatives resulted in an estimated 30% time reduction compared to the traditional pharmacy supply route. **Conclusion:** A multidisciplinary, structured strategy enabled safe and timely high-



concentration KCl administration in critical care units. System-level enhancement, coupled with staff education and robust medication controls, successfully balances the imperative for medication safety with clinical urgency of rapid access.

Abstract P13

Maritime Marvel - Military Pharmacy in Hyperbaric Oxygen Therapy and Underwater Medicine

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ABSTRACT

Background and Objectives: The Malaysian Armed Forces Pharmacy plays significant roles in conserving the fighting strength of the Army, the Navy and the Air Force – both in peacetime and in war, as a part of the Health Services Support. Hyperbaric oxygen therapy (HBOT) and underwater medicine is crucial for the Naval Special Forces (PASKAL) and the Navy Divers in order to safely execute various maritime operations. Military pharmacy contributes by ensuring the safety and appropriateness of drug therapy for these individuals and the HBOT patients. **Objective:** This study aims to share the roles and opportunities for pharmacists to contribute in patient care and safety of HBOT and underwater medicine. **Methods:** This is a documented sharing of a military pharmacist who has served ‘the Navy People’ for three years and underwent a medical diving course to learn about diving related illnesses. **Results and Discussion:** Pharmacist roles in underwater medicine is pivotal in aligning medication use with altered physiological conditions in an underwater environment. They ensure that medications used during HBOT are compatible with hyperoxic conditions and minimize any associated risks. Emergency preparedness can also be improved by proper stock management and safe use of essential medications such as pain relievers, antibiotics and motion sickness treatments. **Conclusion:** Pharmacists also can provide guidance on vaccinations, anti-malarial drugs and motion sickness prevention for remote-area deployments. Safe use of medications in people with chronic diseases such as asthma and diabetes are important to minimize risks associated with their health status in an underwater environment. Certain drugs behave differently under pressure and oxygen-rich

environments, therefore pharmacological understanding on these medications can ensure the safety of our military divers, which consequently leads to the enhancement of safeguarding the nation.

Abstract P14

Supporting Boots on the Ground: Duties and Dilemmas of a Military Pharmacist in the Malaysian Field Hospital, Sagaing Region, Myanmar

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ABSTRACT

Background and Objectives: Ops Starlight 3 marked Malaysia’s humanitarian deployment to the Sagaing Region, Myanmar—an area impacted by political unrest, armed conflict, and a 7.7-magnitude earthquake on 28 March 2025. Twenty-four days after the disaster, the Malaysian Field Hospital was deployed and operated from 21 April to 28 May 2025 under complex and high-risk conditions. The mission involved 29 healthcare personnel, including surgeons, anaesthesiologists, medical officers, nurses, and a pharmacist. Services provided included outpatient care, inpatient management, and surgical operations. Over 38 days, a total of 3706 outpatient cases were treated, and 305 surgeries were performed during the 31-day operative period. These included 215 general surgeries, 82 orthopaedic procedures, and 8 plastic reconstructive cases. The general objective of this case was to report and share the experiences as a pharmacist in ensuring optimum pharmaceutical care throughout the whole mission. **Methodology:** This case report retrospectively reviews prescriptions issued during the mission, covering both inpatient and outpatient services. **Results and Discussion:** Findings indicated a high demand for medications related to non-communicable diseases (NCDs), including hypertension, diabetes, and haemorrhoidal conditions. There was also substantial use of painkillers and antibiotics for post-surgical prophylaxis and wound care for inpatient and outpatient settings. Challenges included disrupted supply chains, limited storage and aseptic facilities, language barriers, and the unstable post-disaster



environment. Despite these constraints, pharmaceutical services remained consistent and safe, enabling the effective delivery of care. **Conclusion:** This mission underscores the vital role of military pharmacists in ensuring operational readiness and continuity of care during humanitarian missions. Military pharmacist contributions are especially critical in politically unstable and disaster-affected settings, where both acute and chronic health needs must be addressed under resource limitations.

Abstract P15

Medicines at Altitude: The Tactical Role of Pharmacists in Aviation Medicine

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ABSTRACT

Background and Objectives: Military pharmacist at Institute of Aviation Medicine (IAM) serve a critical function in aviation medicine, ensuring the safety and performance of aircrews operating in high-risk and high-altitude environments. Unlike conventional pharmacy roles, military pharmacists integrate pharmacological knowledge with flight physiology, contributing directly to mission readiness and operational safety. The main goal of this study is to share the experiences and vital roles of pharmacists in aviation medicine. It aims to showcase how their pharmaceutical expertise contributes to patient care and safety in this specialised field. **Methodology:** This is a documented case sharing of a military pharmacist who has served in the IAM for five years. **Results:** Integration of pharmacological expertise with aviation physiology principles within the Royal Malaysian Air Force has contributed significantly to enhancing aircrew safety and operational readiness. Military pharmacist played a pivotal role in aligning medication use with flight safety standards by actively participating in aeromedical boards, implementing “Do Not Issue” (DNI) and “Do Not Fly” (DNF) protocols, and advising on therapeutic suitability for flight personnel. The establishment of these medication control systems, tailored to the operational environment and military healthcare structure, has led to improved screening and safer prescribing practices for aircrew. **Discussion:** Unlike civilian healthcare settings, the aviation environment demands acute awareness of how pharmacological agents interact with altitude, hypoxia, G-forces, and fatigue—all of

which can impair pilot performance and jeopardise flight safety. **Conclusion:** As essential aviation medicine team members, pharmacists optimise medication safety through proactive risk assessment, crew education, and regulatory stewardship. Their role is pivotal in preserving cognitive function and physiological resilience during flight operations.

Abstract P16

Assessment of Direct Oral Anticoagulants Dosing Appropriateness in Outpatients with Atrial Fibrillation: A Tertiary Care Experience in Malaysia

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ABSTRACT

Background and Objectives: Proper administration of direct oral anticoagulants (DOACs) is essential for optimising therapeutic efficacy and minimising safety risks in patients with atrial fibrillation (AF). Although established dosing guidelines exist, deviations from recommended dosages are frequently reported in clinical practice. Data regarding the appropriateness of DOAC dosing in Malaysia is limited. This study evaluated the appropriateness of DOAC dosing in outpatients diagnosed with atrial fibrillation (AF) at a military hospital. **Methods:** A retrospective descriptive study was conducted at Tuanku Mizan Armed Forces Hospital, a tertiary referral center in Malaysia. The study included outpatients with AF who received DOAC therapy between January and December 2024. Dosing appropriateness was assessed based on the 2021 European Heart Rhythm Association (EHRA) Practical Guide. Descriptive statistics were applied; continuous variables are presented as medians with interquartile ranges (IQRs), and categorical data as frequencies with percentages. **Results and Discussion:** Ninety-nine patients with AF participated in the study. The distribution of prescribed DOACs was as follows: apixaban was prescribed to 22 patients (22.2%), dabigatran to 33



patients (33.3%) and rivaroxaban to 44 patients (44.4%). The median age of the participants was 73 years and 67.6% of the patients were male. Most Malay patients (87%) received DOACs compared to patients from other racial groups. Among individuals with a CHA₂DS₂-VASc score greater than 4, rivaroxaban was the most commonly prescribed medication. Approximately 79.8% of patients (n=79) received appropriate DOAC doses per guidelines. However, 22.2% (n=20) were dosed inappropriately, with nine patients (9.1%) overdosed and eleven patients (11.1%) underdosed. Dabigatran had a 66.7% overdosing rate, while apixaban had a 45.5% underdosing rate. **Conclusion:** Almost one in five patients were prescribed incorrect doses of DOACs, with the main issue being underdosing. These findings highlight the need for enhanced clinical protocols and pharmacists' involvement to support accurate DOAC dosing decisions in outpatients with AF.

Abstract P17

Development of Graphene Oxide and Reduced Graphene Oxide for Drug Delivery

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ABSTRACT

Background and Objectives: Graphene-based nanomaterials have emerged as promising platforms for drug delivery due to their large surface area, functionalisation potential, and biocompatibility. This study focuses on the development and comparative evaluation of graphene oxide (GO) and reduced graphene oxide (rGO) as drug delivery carriers, using methylene blue (MB) as a model therapeutic compound. **Methods:** GO and rGO were synthesised via improved Hummers' method and chemical reduction, respectively. The resulting nanocarriers—GO, rGO, and their MB-loaded complexes (GO-MB and rGO-MB)—were characterised in terms of particle size, zeta potential, infrared spectra, thermal stability, *in vitro* toxicity and pH-responsive drug release. **Results and Discussion:** Particle size analysis revealed GO-MB and rGO-MB sizes of 3.10±0.23 µm and 5.91±0.5 µm, respectively. Zeta potential measurements confirmed their colloidal stability. FTIR spectra indicated successful oxidation and reduction processes, with a shift in the absorption bands suggesting the

possible π - π interaction occurred between GO/rGO with MB. Drug release profiles at pH 7.4 and pH 4.5 demonstrated pH-responsive behavior, with complete release occurring within 24 hours (GO-MB) and 20 minutes (rGO-MB) at acidic pH, relevant to the tumor microenvironment. *In vitro* cytotoxicity studies on breast cancer cells and human fibroblasts revealed that GO-MB exhibited greater selectivity and lower toxicity to normal cells compared to rGO-MB. **Conclusion:** Overall, this work highlights the potential of GO and rGO as nanocarriers in drug delivery applications. These findings suggest that GO may offer better control and safety in delivering therapeutic agents to target tissues.

Abstract P18

A Study on Knowledge, Attitude and Practice of Benzodiazepines Usage among Psychiatric patients in Klang Primary Healthcare Clinics

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ABSTRACT

Background and Objectives: Albeit their therapy effectiveness, notable adverse effects of benzodiazepines are worrisome. This study aimed to assess the understanding, attitude and practice of benzodiazepines among psychiatric patients in Klang health clinics. **Methods:** Data was collected from *Klinik Kesihatan Bandar Botanik, Port Klang, Pandamaran* and *Bukit Kuda* using a prospective cross-sectional method. Validated questionnaire was distributed to consented participants aged 18 years and above on benzodiazepine therapy. Those with terminal illnesses, poor cognition and illiterate in English and/or *Bahasa Melayu* were excluded. **Results and Discussion:** 96 participants were enrolled in the study with majority (65.3%, N: 63) from *Klinik Kesihatan Bandar Botanik*. Prevalence of benzodiazepine usage was higher among female patients (56.8%, N: 54) compared to males (43.2%, N: 42) and most common in individuals aged between 41–64 years (38.9%, N: 37). Participants' knowledge assessment revealed that only half (41.1%, N: 40) were aware of benzodiazepines and many significantly



lacked understanding on therapy indications (53.1%, N: 51), side effects (30.5%, N: 29) and withdrawal risks (63.2%, N: 61). While majority (60%, N: 58) acknowledged the addictive potential of benzodiazepines, nearly half (44.8%, N: 43) were uncertain about their safety when used in combination with other substances. As for practices, physicians prescribed benzodiazepines for short term usage (63.2%, N:61) primarily for insomnia, anxiety and depression. Oral Lorazepam (52.6%, N: 50) was most frequently prescribed followed by Clonazepam (27.4%, N: 26), Alprazolam (16.8%, N: 16) and Diazepam (3.2%, N: 3). Alarming, (71.6%, N: 69) of participants were unaware of the specific benzodiazepine they were taking. These findings highlight significant gaps in patient knowledge and emphasize the need for improved education and counseling regarding benzodiazepine use in primary care. **Conclusion:** Innovative clinic campaigns like “*Penggunaan Ubat Psikotropik Berhemah- Klinik Kesihatan Klang*” involving community outreach and healthcare training on appropriate benzodiazepine use are pivotal steps in ensuring the safe use of these high-alert medications.

Abstract P19

Impact of Pharmacist-Patient Communication on Treatment Satisfaction and Adherence Toward Iron Chelation Therapy in Patients with Thalassemia

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ABSTRACT

Background and Objectives: Poor adherence to iron chelation therapy (ICT) has been reported among patients with thalassemia and it remains a significant healthcare burden in Malaysia. However, little is known about how communication between pharmacists and patients affects treatment satisfaction and adherence. This study aimed to explore the impact of pharmacist-patient communication on treatment satisfaction and adherence to ICT among patients with thalassemia. **Methods:** A cross-sectional, self-administered survey was conducted in four government hospitals and one teaching hospital in Malaysia, focusing on patients with thalassemia. The survey evaluated pharmacist-patient communication, treatment satisfaction, and levels of adherence to ICT. **Results and Discussion:** A total of 215 patients participated. The majority were male (51.2%) and

Malay (67%), with a mean age of 22.78 years (SD=9.31). On average, respondents had been living with thalassemia for 19.43 years (SD=9.72) and the majority received the combination of deferoxamine with deferiprone (32.6%). Respondents generally reported good communication with pharmacists during their visits (M=57.27 out of 75, SD=11.73) and expressed high level of satisfaction with ICT (M=71.1 out of 95, SD=12.49). Among satisfaction domains, perceived effectiveness scored highest (M=23.52 out of 30, SD=5.358), while the treatment burden was rated the lowest (M=17.67 out of 25, SD=4.377). A modest but significant positive correlation was observed between the quality of pharmacist-patient communication and treatment satisfaction ($r = 0.158$, $p < 0.05$). Approximately 50.2% of respondents reported adherence to ICT. Female gender (OR=0.480, 95% CI=0.279-0.827, $p < 0.05$), better communication (OR=1.060, 95% CI=1.033-1.088, $p < 0.001$), and higher satisfaction with ICT (OR=1.024, 95% CI=1.001-1.048, $p < 0.05$) were identified as significant predictors of adherence. **Conclusion:** Effective communication is reported as a significant contributor to treatment satisfaction and adherence to ICT. Incorporating such communication strategies with more tolerable and less burdensome therapies is recommended to optimize treatment outcomes.

Abstract P20

Identifying Barriers to Inhaler Techniques in the Elderly Population: A Systematic Review

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ABSTRACT

Background and Objectives: With the rapid rise of global elderly population, World Health Organization (WHO) revealed chronic respiratory diseases as one of the leading causes of morbidity and mortality worldwide. A constantly high frequency of inhaler errors was observed among elderly patients. Inhaler errors not only influence disease outcomes but also impact the patient's health and financial status. The aim of this systematic review is to evaluate the common types of errors and frequency of incorrect inhaler techniques, as well as to identify the barriers to inhaler techniques in the elderly population with asthma or chronic obstructive pulmonary disease (COPD). **Methods:** Searches were conducted via PubMed, Cochrane CENTRAL and Scopus to include studies that evaluate the frequency of incorrect inhaler techniques and the common types of error



among the elderly population. The Joanna Briggs Institute Critical Appraisal tools and Cochrane risk-of-bias tool were used to assess the quality of selected articles. **Results and Discussion:** A total of 255,076 articles were identified but only 15 articles were included in this systematic review. The overall frequency of inhaler errors across all studies was 69.8% and metered dose inhaler was found to be associated with a higher frequency of errors compared to dry powder inhaler. The most frequent errors were "did not breathe out to empty lungs before inhalation" and "no breath hold". Cognitive impairment and dementia were identified as significant barrier leading to improper inhaler use. **Conclusion:** Based on the limited number of studies reviewed, there are opportunities to enhance inhaler counselling tailored to the elderly population or to design elderly-friendly inhaler devices for the improvement of geriatric care.

Abstract P21

The Impact of Epilepsy Review Services on Seizure Control – A Phase II Analysis in PKD Klang

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ABSTRACT

Background and Objectives: The prevalence of active epilepsy and lifetime epilepsy in Malaysia is 4.2 and 7.8 per 1000 people. Epilepsy Review System (ERS) was introduced as an innovative tool in Klang primary care clinics as means of improving the health of epilepsy patients. To re-evaluate the impact of the Epilepsy Review Services on seizure control in patients with epilepsy in primary care in PKD Klang after a decade of ERS. **Methods:** A descriptive, one-year prospective study on local epilepsy patients attending *Klinik Kesihatan Bandar Botanik*, *Klinik Kesihatan Bukit Kuda* and *Klinik Kesihatan Pelabuhan Klang* was carried out. Consented, eligible patients were enrolled on ERS and patient's baseline and six-monthly follow-up data were collected in terms of anti-epileptic (AED) therapy compliance, safety and side effects. Routine therapeutic drug monitoring was performed for each recruited individuals pre and post ERS. **Results and Discussion:** A total of 31 patients' records were analysed. After six months of (ERS), significant patients exhibited therapeutic drug monitoring (TDM) results within the normal therapeutic range for all anti-epileptic drugs (AEDs)

(n = 13; 41.9%), followed by those in the sub-therapeutic range for all AEDs (n = 11; 35.5%). McNemar test revealed a statistically significant improvement in seizure control (N = 31, $p = 0.006$), along with a notable increase in medication compliance (N = 31, $p < 0.001$). ERS continues as a value-added clinical pharmacokinetic innovation in improving the quality of life of epilepsy patients in Klang. **Conclusion:** ERS significantly benefits epilepsy patients by decreasing the frequency of seizure, enhancing AED adherence and improving understanding of AED in terms of drug safety. Introduction of ERS to all primary care facilities is a noble step as we move towards a "zero-seizure" community care.

Abstract P22

Exploring the Suitability of a Ward-Based Clinical Pharmacy Activity Collection Tool for Ambulatory Care Practice: A Mixed-Methods Study

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ABSTRACT

Background and Objectives: At a London-based hospital, a validated ward-based clinical pharmacy activity collection tool has been used to monitor activities of clinical pharmacy teams across all settings, including ambulatory care services. No data confirm its representativeness for the full range of ambulatory clinical pharmacy services, and pharmacists share this concern. This study aimed to identify the range of clinical pharmacy activities in ambulatory care, assess the suitability of the existing ward-based tool for capturing these activities, and recommend modifications. **Methods:** Non-participant direct observations were conducted to record pharmacists' clinical activities in ambulatory clinics and multidisciplinary meetings. These observations were compared to the existing ward-based tool to identify discrepancies. Semi-structured interviews with eight ambulatory pharmacists were transcribed verbatim and thematically analysed inductively to explore the tool's representativeness of their routine clinical activities. **Results and Discussion:** Twenty-nine clinical pharmacy activities were observed in ambulatory services. Only fifteen were captured by the existing tool, with therapy monitoring and



recommending therapeutic changes not accurately captured. Pharmacists agreed that the tool was not fully representative and included irrelevant activities. Four common uncaptured activities were multidisciplinary meeting-specific activities, arranging laboratory tests, monitoring patient outcomes, and liaising with community healthcare professionals. This study identified 33 candidate ambulatory clinical pharmacy activities. **Conclusion:** The existing ward-based tool does not fully capture the full range of ambulatory care clinical pharmacy activities, highlighting the need for an improved tool. Pharmacists recommended including the uncaptured activities. The candidate activities provide a foundation for standardised measurement of relevant ambulatory care activities to enable effective workforce deployment and improve patient outcomes.

Abstract P23

Is there a Maldistribution of Health Workers in Malaysia and Geographical Inequalities during 2010-2022?

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ABSTRACT

Background and Objectives: Meeting the HRH numbers and achieving an equitable distribution across the states in Malaysia is critical to achieving United Nations Sustainable Development Goal 3. The objective of this study is to determine the extent of maldistribution by state in Malaysia. **Methods:** Indices of dissimilarity, Theil index, concentration index (CI), and slope index inequality were used to measure inequality. **Results:** This study suggests there is a disparity in HRH distribution by using all six inequality measures. However, different indicators provide different results of inequality in health. SII, the absolute differences in the distribution of HRH across socioeconomic groups report doctors (9.77) and nurses (7.44) having the highest inequality compared to the others. Findings for CI, however, discover pharmacists (9.62), doctors (8.48), and dentists (6.30) are higher as compared to nurses (5.21) and AMOs (-2.67), which indicates the relative concentration of these HRH are higher in socio-economic ranked states. To attain distributive equality, the HRH in Malaysia would need to redistribute about 13% of current doctors, nurses, and dentists and 11% of pharmacists and AMOs to the states with lower socioeconomic ranking (higher

needs). **Discussions:** When 15 states were ordered based on their socioeconomic status, HRH was concentrated in higher-ranked states, albeit with a few exceptions in some states for specific cadres of HRH. In relative terms, over a tenth of HRH is suggested to be redistributed. **Conclusion:** These findings provide a compelling basis for policy interventions aimed at enhancing HRH access in underserved states and reducing inequality, a crucial step towards achieving Universal Health Coverage.

Abstract P24

Methodological quality of health literacy instrument used among school children in Asian country - A Systematic Review

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ABSTRACT

Background and Objectives: This study aimed to examine the methodological quality for measurement properties of health literacy instruments used in children specifically in Asian countries and to identify the most suitable instrument for field application. **Methods:** This systematic review was conducted following Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Health literacy studies conducted between 2013 and 2023 and involving school children aged 6-18 years old were identified through searches in PubMed, Scopus and Web of Science. Only studies that assessed methodological qualities were included. Quality appraisal was conducted using Consensus-based Standards for the selection of health status Measurement Instruments (COSMIN) checklist. **Results:** A total of 10 studies met the inclusion criteria from the screening process. The quality of measurement properties in these studies varied. With 8 items on the COSMIN checklist and 10 studies assessed, this resulted in a total of 90 checklist items evaluated. Based on this, 25 items were classified as very good (primarily for structural validity and general criteria), adequate (n=7, mainly for content validity), inadequate (n=14, mostly for internal consistency), doubtful (n=10, mostly for reliability) and unknown (n=34, primarily for measurement error, cross cultural validity and responsiveness). More than 40% of measurement quality ratings were either unknown or not reported. Among the tools assessed, the 8-item Health Literacy Assessment Tool Chinese version (c-HLAT-8) demonstrated very good quality across most measurement properties compared to others. C-HLAT-8 includes functional, interactive and critical health literacy domains



and has been assessed in children aged 11-17 in China. **Conclusion:** Despite the global interest in health literacy, studies focusing on methodological quality involving school children and Asian countries remain limited. The c-HLAT 8 emerges as a promising tool for field application due to its strong methodological quality and adaptability.

Abstract P25

Systemic Review of Medication Therapy Adherence Clinics in Malaysia

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ABSTRACT

Background and Objectives: Medication Therapy Adherence Clinics (MTACs) are pharmacist-led services in Malaysia designed to improve medication adherence and optimize pharmacotherapeutic outcomes. Despite their widespread adoption, reports on their effectiveness across clinical, economic, and patient-centered outcomes have varied. This systematic review consolidates evidence on MTAC effectiveness within the Malaysian healthcare system. **Methods:** A comprehensive search of PubMed, Scopus, CINAHL, and Web of Science for English or Malay studies (randomized controlled trials, observational, quasi-experimental, qualitative) reporting MTAC outcomes was conducted. Adhering to PRISMA guidelines, study selection and data extraction were performed, with risk of bias assessed using standardized tools. A narrative synthesis was employed due to heterogeneity. **Results and Discussion:** Out of 89 articles initially identified, 29 duplicates were removed, and 31 full-text articles were assessed, leading to the inclusion of 26 studies. Fourteen studies focused on Diabetes MTACs (DMTACs), which consistently demonstrated significant improvements in glycaemic control, with HbA1c reductions ranging from 0.9% to 3.8%. Additional benefits observed in DMTACs included better fasting blood sugar levels, lipid profiles, blood pressure management, enhanced medication adherence, improved medication understanding, and higher patient satisfaction. Qualitative findings also reflected positive patient experiences, with intervention groups generally outperforming control groups. Warfarin MTACs (n=7) showed improved Time in Therapeutic Range (TTR), achieving approximately 66% in the MTAC group versus

around 53% in usual care. Respiratory MTAC (RMTAC) (n=2) studies indicated enhanced asthma control compared to standard care. Haemophilia MTACs (n=1) demonstrated improvements in Annual Bleeding Rate (ABR), with a reduction from 7.67 to 3.91 following improved adherence rates. One study covered retroviral MTACs, and another covered three MTAC types. **Conclusion:** MTACs are effective in improving medication adherence and clinical outcomes, particularly in diabetes management. High patient satisfaction and emerging evidence of cost-effectiveness support these specialized clinics. Findings advocate for the continued expansion and integration of MTAC services in Malaysia to optimize patient care.

Abstract P26

Assessment of Knowledge and Attitudes Towards the Reporting of Adverse Drug Reactions Among Pharmacy Students in Shah Alam, Selangor, Malaysia

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ABSTRACT

Background and Objectives: Assessment of knowledge and attitudes among adverse drug reaction (ADR) reporters is fundamental to effective pharmacovigilance. However, evidence regarding future ADR reporters, such as pharmacy students, remains limited in Malaysia. This study aimed to assess pharmacy students' knowledge and attitudes towards ADR reporting and to examine associations with socio-demographic characteristics. **Methods:** A cross-sectional survey was conducted at Management and Science University (MSU), Shah Alam, between September and October 2024. Pharmacy students enrolled in diploma, bachelor's, or master's programmes were invited to participate. Data were collected using a self-administered, validated, and piloted questionnaire. Knowledge scores were categorised as poor (0–6), moderate (7–11), or good (12–14). Attitude scores were classified as positive (7–13) or negative (0–6). Descriptive statistics and chi-square tests were used to analyse associations between socio-demographic variables and knowledge and attitude scores. **Results and Discussion:** All 192 students responded (100%



response rate). Most participants were aged 18–22 (83.9%), enrolled in the Bachelor of Pharmacy programme (57.8%), and female (74.0%). Knowledge scores were good in 10.9%, moderate in 61.0%, and poor in 28.1% of students. Overall, 64.6% demonstrated a positive attitude towards ADR reporting. Statistically significant associations were found between age and knowledge scores, $\chi^2(6, N = 192) = 15.60$, $p = .016$, and between academic programme and knowledge scores, $\chi^2(6, N = 192) = 64.09$, $p < .001$. Attitude scores were significantly associated with age, $\chi^2(3, N = 192) = 13.70$, $p = .003$; academic programme, $\chi^2(3, N = 192) = 51.88$, $p < .001$; and gender, $\chi^2(1, N = 192) = 10.21$, $p = .001$. **Conclusion:** Pharmacy students demonstrated moderate knowledge and positive attitudes towards ADR reporting. Considering socio-demographic characteristics in the design of structured pharmacovigilance education may enhance future reporting practices and improve patient safety.

Abstract P27

Is Yoga Just as Good as Physical Exercise or is there Something More for Mental Health Improvement? : A Systematic Review and Meta-Analysis.

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ABSTRACT

Background and Objectives: There is growing popularity in the incorporation of yoga into clinical practice as an adjunctive practice to improve mental health. Like yoga, physical exercise (PE) has been found to improve mood states. A multilevel meta-analytic review was performed to critically synthesize the evidence of yoga in comparison to PE in promoting mental health. **Methods:** Five electronic databases including Medline, Embase, and CENTRAL were systematically searched from inception to 21st of January 2022. (PROSPERO registration number: CRD42020173478). A three-level multilevel meta-analytic model was used to calculate the overall effect of yoga in comparison to PE on mental health. Univariate meta-analysis with aggregated effect sizes were also conducted to ensure robustness of the results. Moderator analyses on mental health outcomes, participants' characteristics, types of yoga, types of PE, and intervention length were conducted. **Results and Discussion:** Thirty-two trials were included, and 29 trials were pooled for multilevel meta-analysis. The duration of intervention ranged from 1 session to 6 months. Results showed that yoga exerted a small and

significant beneficial effect on mental health (SMD = 0.24, 95% CI: 0.14, 0.35), compared to PE. The univariate meta-analysis also showed a similar effect. Moderator analyses found significantly larger effects for the S-VYASA yoga program (SMD = 0.62) and vinyasa yoga (SMD = 0.66) compared to other forms of yoga styles ($F(5, 138) = 4.487$; $p < 0.001$). All but two trials had an overall high risk of bias, and the quality of evidence was low. **Conclusion:** The multilevel analysis showed that yoga intervention was significantly more effective in enhancing mental health compared to PE, in a small magnitude of effect, especially empirically tested yoga programs (i.e., S-VYASA, vinyasa yoga). Literature necessitates more well-designed and larger sample size randomised controlled trials. Yoga types, frequency, and adverse events could be worth further evaluation for this age-old lifestyle practice.

Abstract P28

Understanding the Caregiver Burden in Parkinson's Disease

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ABSTRACT

Background and Objectives: Parkinson's Disease (PD) is a common age-related neurodegenerative disorder that affects the activities of daily living and leads to cognitive decline. Despite research on quality of life (QoL) of people with PD (PwPD), caregiver burden remains underexplored in Malaysia. This study aims to understand the extent of burden among caregivers of PwPD and identify the contributing factors. **Methods:** A two-phase mixed-methods study was conducted in Greater Klang Valley, Malaysia. In phase one, the Caregiver Burden Inventory (CBI) was administered to the caregivers of PwPD by the researchers. Phase two was a semi-structured interview to allow deeper understanding on the quantitative results. Quantitative data were analysed using descriptive analysis while qualitative data were analysed using thematic analysis to supplement the quantitative findings. Data from both quantitative and qualitative methods were triangulated to enhance comprehensiveness and credibility of the findings. **Results and Discussion:** The CBI was completed by 73 caregivers with the mean age of 50.5±15.7 years old. Majority of them were full-time caregivers (n=66,90.4%),



and half of them were a family member to PwPD (n=36,49.3%). The median caregiving experience was 5 years (interquartile range=3,10). Twelve caregivers then participated in the interview. From the CBI, almost half of the participants (n=33,45.2%) scored more than 36, indicating a risk of “burning out”. The most concerning item was the need to watch PwPD constantly. Through the interview, three main themes supporting with the quantitative results were identified: (1) Personal burden of caregiving associated with physical burnout and emotional distress; (2) Hidden burden of caregiving related to social and financial strain; (3) Gaps in health-related knowledge and experience gaps, especially in medication management and response to medical emergency. **Conclusion:** The findings pinpointed substantial challenges and gaps in the caregiving of PwPD, warranting the need for more structured caregiver support services in Malaysia.

access. Key sustainability strategies proposed included diversifying funding sources, introducing tax incentives and subsidies, and implementing performance-based funding models. Stakeholders emphasised the need for clear national policy direction and data-driven cost benchmarking to guide investment and planning. **Conclusion:** This study underscores the need for systemic reform to enhance the financial sustainability of aged care facilities in Malaysia. Stakeholder insights highlight the importance of coordinated policy action, strategic funding mechanisms, and evidence-based benchmarking. Ensuring long-term viability of aged care facilities will be essential to meet the demands of a rapidly ageing population.

Abstract P29

Exploring Financial Sustainability in Aged Care Facilities in Malaysia: Stakeholder Insights from a Nominal Group Technique

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ABSTRACT

Background and Objectives: Malaysia is rapidly transitioning into an ageing nation, with the proportion of individuals aged 65 years and above projected to reach 14.5% by 2040. This demographic shift is placing increasing pressure on the sustainability of aged care services. Aged care facilities are expected to play a central role in addressing older adults' complex needs, yet their financial viability remains a critical concern. This study aimed to explore the financial challenges faced by these facilities and identify stakeholder-informed strategies to ensure long-term sustainability. **Method:** A qualitative study using nominal group technique (NGT) was conducted with 18 stakeholders, including care operators, geriatrician, non-government organisation representatives, financial planner, senior economist and analyst to identify the financial challenges and sustainability of aged care facilities in Malaysia. Data from NGT sessions were thematically analysed using an inductive approach to identify common challenges and proposed solutions. **Result and Discussion:** Stakeholders highlighted rising operational costs, inconsistent funding models, and the absence of long-term financing mechanisms as major challenges. Out-of-pocket payments remain the dominant funding source, contributing to inequities in